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C L A I M S

1. A process for the preparation of detergents,  
comprising separating the hydrocarbonaceous product  
stream from a Fischer-Tropsch process producing normally  
liquid and normally solid hydrocarbons into a light  
5 fraction comprising mainly C<sub>20</sub>-hydrocarbons, preferably  
the light fraction comprising at least 90 %wt, more  
preferably at least 95 %wt, of C<sub>20</sub>-hydrocarbons, and one  
or more heavy fractions comprising the remaining  
hydrocarbons, hydrogenation of at least part of the light  
10 fraction to convert unsaturated hydrocarbons and/or  
oxygenates into saturated hydrocarbons, distillation of  
product thus obtained into at least one fraction  
comprising detergent hydrocarbons, dehydrogenation of at  
least part of the detergent hydrocarbons to obtain a  
15 detergent hydrocarbon stream comprising mono-olefins and  
conversion of the mono-olefins into detergents.
2. A process for the preparation of detergents in which  
process a hydrogenated product, which product is obtained  
by separating the hydrocarbonaceous product stream from a  
20 Fischer-Tropsch process producing normally liquid and  
normally solid hydrocarbons into a light fraction  
comprising mainly C<sub>20</sub>-hydrocarbons, preferably the light  
fraction comprising at least 90 %wt, more preferably at  
least 95 %wt, of C<sub>20</sub>-hydrocarbons, and one or more heavy  
25 fractions comprising the remaining hydrocarbons,  
hydrogenation of at least part of the light fraction to  
convert unsaturated hydrocarbons and/or oxygenates into  
saturated hydrocarbons and distillation of product thus  
obtained into at least one fraction comprising detergent

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hydrocarbons, is dehydrogenated to obtain a detergent hydrocarbon stream comprising mono-olefins, followed by conversion of the mono-olefins into detergents.

3. A process according to claim 1 or 2, in which the  
5 light fraction comprises mainly, preferably 90 %wt, more preferably 95 %wt, C<sub>18</sub>-hydrocarbons, especially mainly, preferably 90 %wt, more preferably 95 %wt, C<sub>16</sub>-hydrocarbons, more especially mainly, preferably 90 %wt, more preferably 95 %wt, C<sub>14</sub>-hydrocarbons.

10 4. A process according to any of claims 1 to 3, in which the hydrocarbonaceous product stream of the Fischer-Tropsch process, before separation into the light fraction and the heavy fraction, is separated into a light stream, comprising most, suitably at least 80 %wt,  
15 preferably 90 %wt, more preferably 95 %wt, of the C<sub>1</sub>-C<sub>4</sub> hydrocarbons produced in the Fischer-Tropsch process, especially the light product stream comprising most, suitably at least 80 %wt, preferably 90 %wt, more preferably 95 %wt, of the C<sub>1</sub>-C<sub>3</sub> hydrocarbons produced in  
20 the Fischer-Tropsch process, and optionally unconverted synthesis gas constituents, carbon dioxide and other inert gasses, and a heavy stream which is separated into the light and the heavy fraction.

5. A process according to any of claims 1 to 4, in which  
25 process also a light product is removed from the hydrocarbonaceous product stream from the Fischer-Tropsch process or the light stream, the light product stream containing mainly the C<sub>7</sub>-products, preferably the C<sub>8</sub>-products, more preferably the C<sub>9</sub>-products, present in  
30 the stream, especially the light product comprising at least 90 %wt, more preferably at least 95 %wt, of the C<sub>7</sub>-products present, more especially the light product

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comprising at least 90 %wt, preferably at least 95 %wt, of the C<sub>8</sub>-products present, still more especially the light product comprising at least 90 %wt, more preferably at least 95 %wt, of the C<sub>9</sub>-products present.

5 6. A process according to any of claims 1 to 5, in which the light fraction which is to be hydrogenated comprises mainly C<sub>9</sub>- to C<sub>18</sub>-hydrocarbons, preferably at least 80 %wt C<sub>9</sub>- to C<sub>18</sub>-hydrocarbons, more preferably at least 90 %wt, especially the light fraction comprises mainly  
10 C<sub>10</sub>- to C<sub>13</sub>-hydrocarbons, preferably at least 80 %wt C<sub>10</sub>- to C<sub>13</sub>-hydrocarbons, more preferably at least 90 %wt, or the light fraction comprises mainly C<sub>14</sub>- to C<sub>17</sub>-hydrocarbons, preferably at least 80 %wt C<sub>14</sub>- to C<sub>17</sub>-hydrocarbons, more preferably at least 90 %wt, the  
15 distillation of the hydrogenated hydrocarbons being an optional feature.

7. A process according to any of claims 1 to 6, in which the conversion of the mono-olefins into detergents comprises at least one step selected from:

- 20 - alkylation with benzene or toluene optionally followed by sulfonation and neutralisation;  
- alkylation with phenol followed by at least one of alkoxylation, sulfonation and neutralisation, sulfation and neutralisation or alkoxylation combined with  
25 oxidation;  
- hydroformylation optionally followed by at least one of alkoxylation, glycosylation, sulfation, phosphatation or combinations thereof  
- sulfonation;  
30 - epoxidation;  
- hydrobromination followed by amination and oxidation to amine oxide; and

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- phosphonation.

8. A process for the preparation of detergents and hydrocarbon fuels from the product stream of a Fischer-Tropsch process, comprising a process as described in any of claims 1 to 7 for the preparation of detergents from a light fraction of the Fischer-Tropsch process in combination with the hydrocracking/hydroisomerisation of the one or more heavy fractions of the Fischer-Tropsch process.

9. A process for the preparation of detergent hydrocarbons comprising separating the hydrocarbonaceous product stream of a Fischer-Tropsch process producing normally liquid and normally solid hydrocarbons into a light fraction comprising mainly C<sub>20</sub>-hydrocarbons, preferably C<sub>18</sub>-, more preferably C<sub>16</sub>-, still more preferably C<sub>14</sub>-hydrocarbons, and one or more heavy fractions comprising the remaining hydrocarbons, hydrogenation of the light fraction to convert unsaturated hydrocarbons and/or oxygenates into saturated hydrocarbons, distillation of product thus obtained into at least one fraction comprising detergent hydrocarbons and optionally dehydrogenation of at least part of the detergent hydrocarbons to obtain a detergent hydrocarbon stream comprising mono-olefins.

10. A process according to claim 9, in which any one or more reject streams in the process for the preparation of detergent hydrocarbons are used as additional feedstreams in the process for the preparation of fuels.

11. A process for the preparation of detergent hydrocarbons and hydrocarbon fuels from the product stream of a Fischer-Tropsch process, comprising a process as described in claim 9 or 10 for the preparation of detergent hydrocarbons from a light fraction of the

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Fischer-Tropsch process in combination with the hydrocracking/hydroisomerisation of the heavy product stream of the Fischer-Tropsch process.

- 5 12. A process for the preparation of detergents comprising dehydrogenation of detergent hydrocarbons to obtain a detergent hydrocarbon stream comprising mono-olefins and conversion of the mono-olefins into detergents, the detergent hydrocarbons being prepared by separating the product stream of a Fischer-Tropsch
- 10 process into a light fraction comprising mainly C<sub>20</sub>-hydrocarbons, preferably C<sub>18</sub>-, more preferably C<sub>16</sub>-, still more preferably C<sub>14</sub>-hydrocarbons, and a heavy fraction comprising the remaining hydrocarbons, hydrogenation of the light fraction to convert
- 15 unsaturated hydrocarbons and/or oxygenates into saturated hydrocarbons, distillation of product thus obtained into at least one fraction comprising detergent hydrocarbons.